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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,875	12/05/2001	Paul Martin	12801.0083.NPUS02	5118
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STEPHEN H. CAGLE HOWREY, SIMON, ARNOLD & WHITE, LLP 750 BERING DRIVE HOUSTON, TX 77057			EXAMINER NECKEL, ALEXA DOROSHENK	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/006,875

**Applicant(s)**

MARTIN ET AL.

**Examiner**

Alexa D. Neckel

**Art Unit**

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 13-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 13-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 16, 17, 19, 20 and 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshizaki et al. (5,582,805).

With respect to claims 1, 16, 17, 22 and 23 Yoshizaki et al. discloses a method for heating a catalyst bed comprising:

having a catalyst bed (44) having an upstream face and downstream face with an electrical heating element (44/45) along one face (col. 15, lines 4-6);

passing reactants through the heating element and catalyst bed (col. 10, lines 28-44); and

heating the electrical element to heat the catalyst bed for start up (col. 1, lines 13-16).

With respect to claim 2, Yoshizaki et al. further discloses wherein the heating element can be along the upstream face (col. 15, lines 4-6).

With respect to claim 3, Yoshizaki et al. further discloses wherein the heating element can be formed in any shape, including a winding shape (col. 15, lines 13-15; figure 9).

With respect to claims 4 and 20, Yoshizaki et al. further discloses wherein the catalyst is a monolith (col. 1, lines 18-23 and figure 16).

With respect to claim 5, Yoshizaki et al. further discloses wherein the catalyst can be platinum on an activated alumina carrier (col. 1, lines 18-23). This catalyst is known (an disclosed herein) to operate as an oxidation catalyst as well as a reforming catalyst.

With respect to claims 18 and 24, Yoshizaki et al. further discloses wherein the heating of the catalyst is determined and controlled during operation (col. 46, lines 44-46).

With respect to claim 19, Yoshizaki et al. further discloses wherein the electrical heating element (110) is weaved through the catalyst bed (figure 20, 22, and 32).

3. Claims 13, 14, 16, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bayer et al. (5,562,885).

With respect to claims 13, 14, 16, 17, 19 and 20, Bayer et al. teaches a method of heating a monolithic catalyst bed (13/80) by providing an electrical heating element in a coil (84, figure 5) located substantially within the catalyst bed (col. 7, lines 37-54; figure 5); and

heating the element , thereby heating the catalyst, to a desired temperature for start-up (col. 1, lines 24-34).

4. Claims 16, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Brunson et al. (5,512,251).

With respect to claims 16, 17 and 20, Brunson et al. discloses a method for heating a monolithic catalyst bed (col. 2, lines 15-30 and col. 7, lines 43-59)to start-up

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temperature with an electrical heating element (col. 1, lines 4-11 and col. 2, lines 15-20).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bayer et al. (5,562,885).

With respect to claims 15 and 18, Bayer et al. discloses all of the steps as discussed with respect to claims 15 and 16 above, as well as the high efficiency achieved by the rapid and uniform heating of the catalytic converter (col. 7, line 65- col. 8I, line 1), but fails to explicitly disclose heating during transient operation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide heat, as needed, during operation of the converter or order to further achieve high efficiency.

7. Claims 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunson et al. (5,512,251).

With respect to claims 18 and 21, Bayer et al. discloses all of the steps as discussed with respect to claim 16 above, as well as wherein the electrical heating element (42, 46) is wrapped around the monolith (figure 4, 16 and 17) and wherein

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gases need to make contact with hot catalyst to effect satisfactory conversion (col. 1, line 60- col. 2, line 14), but fails to disclose wherein the heater is operated at a desired temperature during transient operation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide heat, as needed, during operation of the converter or order to further achieve effective and satisfactory conversion.

### ***Response to Arguments***

#### Drawings

The objection to the drawings is withdrawn due to applicant's amendments to the specification and figure 2.

#### Specification

The objection to the title is withdrawn due to applicant's amendment.

#### 35 USC 102

With regard to claim 1, applicant argues that Yoshizaki does not teach that the apparatus can be used specifically to heat a catalyst bed for startup.

The examiner respectfully disagrees. Yoshizaki states at col. 1, lines 1—16 [emphasis added]:

"The present invention relates to a catalytic apparatus for purifying exhaust gas from an internal combustion engine of, for example, an automobile, and particularly, to an improvement of an **electrically heated catalytic apparatus** that quickly heats catalyst to an activation temperature even **when the engine is started** at a low temperature below the catalyst activation temperature."

It is the examiner's position that the phrase "when the engine is started" is equivalent to "startup".

With regard to claim 16 applicant argues that Yoshizaki does not disclose a catalyst bed in communication with an electric heating element and does not disclose maintenance of the desired temperature.

The examiner respectfully disagrees. Yoshizaki states at col. 1, lines 1—16 [emphasis added]:

“The present invention relates to a catalytic apparatus for purifying exhaust gas from an internal combustion engine of, for example, an automobile, and particularly, to an improvement of an **electrically heated catalytic apparatus** that quickly heats catalyst to an activation temperature even when the engine is started at a low temperature below the catalyst activation temperature.”

It is the examiner's position that the recitation of an electrically heated catalytic apparatus, along with figures 15 and 16, fully encompass a catalyst bed in communication with an electric heating element.

Further, the claim recites that the heating element is heated “so as to maintain the desired temperature of the catalyst bed”. Even though the heater of Yoshizaki may be turned off once the bed reaches its desired temperature (as stated in col. 29, lines 36-48), the heater is still used to maintain the desired temperature of the catalyst bed for a period of time. As the claim does not recite a specific length of time to “maintain”, Yoshizaki continues to read on the claim.

With regard to claim 22, applicant argues that Yoshizaki does not disclose positioning an electrical heating element upstream of the catalyst bed and passing a fluid across the heating element through the bed, wherein the bed is heated to a desired temperature.



The examiner respectfully disagrees. Yoshizaki states at col. 1, lines 55-67

[emphasis added]:

"The catalytic carrier, particularly the heated region, is locally electrically heated by an electric current supplied from the outer periphery of the catalytic carrier.

An insulation area is provided so as to extend from the outer periphery of the carrier to the central portion of the carrier, said electric path is formed around said insulation area, a region of the catalyst upstream of the insulation area is at least partially formed as the heated region and a region of the catalyst downstream of the insulation area is formed as the unheated region which is practically not heated.

**In this case, the upstream region of the carrier is first electrically heated and the heat flows with an exhaust gas to the downstream catalytic region which is then heated."**

The examiner believes that this passage clearly discloses the disputed limitations of the claim.

With regard to claim 13, applicant argues that Bayer does not disclose an electrical heating element positioned within a cooling coil located within the catalyst bed and heating the electrical element and thereby heating the catalyst bed. Applicant further states that Bayer discloses a "heating coil" rather than the recited "cooling coil".

It is the examiner's position that applicant's "cooling coil" is "cooling" in name only. Within applicant's coil is a heating element which functions as "heating the catalyst bed to a desired temperature". As such, Bayer continues to read on the claim.

With regard to claim 16, applicant argues that Bayer does not disclose a catalyst bed in communication with an electrical heating element and heating the element to maintain the desired temperature of the catalyst bed.



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The examiner respectfully disagrees. Bayer states at col. 1, lines 23-34

[emphasis added]:

"In such catalytic converters as well, improved efficiency in catalytic reburning of exhaust gases prevails at higher operating temperatures. In order to attain improved conversion performance, particularly in the cold-starting phase, while the catalytic converter is still at low operating temperatures, it is known to heat the metal carrier body electrically. The electrical power supply of the vehicle is used as the current source therefor. The electrical heating can be turned off once the catalytic converter, or the carrier body provided with the catalytic coating, has reached its operating temperature because of the flow of the hot exhaust gas through it."

Since the claim recites that the heating element is heated "so as to maintain the desired temperature of the catalyst bed", even though the heater of Bayer may be turned off once the bed reaches its desired temperature, the heater is still used to maintain the desired temperature of the catalyst bed for a period of time. As the claim does not recite a specific length of time to "maintain", Yoshizaki continues to read on the claim.

Bayer also states at col. 7, lines 37-54 [emphasis added]:

"A further embodiment of the invention is diagrammatically shown in FIG. 5. A catalytic converter 80 shown therein has a cylindrical jacket housing 82, which receives a non-illustrated carrier body. The carrier body, which is produced of sheet-metal layers, is produced by the fundamentally known star winding technique disclosed in German Patent DE 40 16 276 C1. That carrier body likewise includes spaced-apart smooth sheet-metal layers, and corrugated sheet-metal layers are disposed in the interstices. In the production of the catalytic converter, before the carrier body is wound, a preformed electrical heating element 84 is introduced between the stacked sheet-metal layers, in a shaping which is shown in FIG. 5. Electrical heating elements that are suitable for this kind of shaping are basically available on the market. As is shown in the drawing, the tubular electrical heating element has a three-dimensional, meandering shaping. The electrical leads of the heating element 84, which are disposed on end regions, are connected to a power supply 86 of the motor vehicle."

The examiner believes that this passage clearly discloses a catalyst bed in communication with an electrical heating element.

With regard to claim 16, applicant argues that Brunson does not disclose providing a catalyst bed in communication with an electrical heating element and the element is not heated so as to maintain the desired temperature of the catalyst bed.

The examiner respectfully disagrees. Brunson states at col. 1, lines 4-16 [emphasis added]:

“This invention relates to a converter body, and more particularly to a **converter body wherein a portion thereof is electrically heatable**. The remaining portion is a non-electrically heatable “light-off” portion integral with the electrically heatable portion as will be described below. The converter body is characterized by a cellular metal honeycomb desirably formed of thin metal layers or strips which are contained in a retaining shell. The combination of the metal honeycomb and the retaining shell forms a core which may then be placed in a housing. In one embodiment, the housing is adapted to be inserted in an exhaust line extending from an internal combustion engine, for example, to aid in the removal of pollutants contained therein.”

Brunson further states at col. 2, lines 15-18:

“To achieve initial heating of the catalyst at engine start-up, there is conveniently provided an electrically heatable catalytic converter unit, preferably one formed of a thin metal honeycomb monolith.”

Since the claim recites that the heating element is heated “so as to maintain the desired temperature of the catalyst bed”, even though the heater of Brunson may be turned off once the bed reaches its desired temperature, the heater is still used to maintain the desired temperature of the catalyst bed for a period of time. As the claim does not recite a specific length of time to “maintain”, Brunson continues to read on the claim.

35 USC 103

With respect to claims 15 and 18, applicant argues that Bayer does not teach or suggest the operation of the converter during transient operation.

It has been held that obviousness may sometimes be based on the common knowledge of persons skilled in the art without relying on a specific suggestion in a particular reference. In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

With respect to claims 18 and 21, applicant argues that Brunson does not teach or suggest the operation of the converter during transient operation.

It has been held that obviousness may sometimes be based on the common knowledge of persons skilled in the art without relying on a specific suggestion in a particular reference. In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa D. Neckel whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexa D. Neckel  
Primary Examiner  
Art Unit 1764

August 2, 2006

  
ALEXA DOROSHENK NECKEL  
PRIMARY EXAMINER